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FINAL REPORT

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PASTURE REJUVENATION WITH LEGUMES AND FERTILIZER IN THE BROWN SOIL ZONE

Funded by: The Agriculture Development Fund

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Prepared by: South West Forage Association

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THE SOUTH WEST SASKATCHEWAN FORAGE CO-OPERATIVE ASSOCIATION LTD

FINAL REPORT

PASTURE REJUVENATION WITH LEGUMES AND FERTILIZER IN THE BROWN SOIL ZONE

SUMMARY:

The SWFA wanted to determine the bloating potential of AC Grazeland Alfalfa, the productivity of a pure alfalfa stand on unproductive land and whether applying phosphate fertilizer to a mature cross seeded grass alfalfa stand would give economic returns. The AC Grazeland alfalfa caused no incidence of bloat in the 4 years of trials with production far exceeding the seeded native cool season and meadowbrome grasses adjacent to the alfalfa. Fertilizer at 68 lbs of liquid phosphate coulter injected on the grass alfalfa pasture doubled production of some grasses but never gave more than enough production to pay for the cost of the fertilizer.

TECHNICAL REPORT:

The development of AC Grazeland (AC), a low bloat causing alfalfa cultivar, and the use of non-bloating legumes in mixture with alfalfa are reported grazing strategies to reduce the occurrence of bloating and increase the productivity of pastures. The objective was to evaluate the bloating potential or bloat reducing potential of AC and the animal grazing performance of AC verses a mixed AC and sainfoin(a non-bloating legume) (AC +S) pasture. In 1998 4.9 acres was seeded to AC and 4.4 acres was seeded to AC+S mixture. Seeding rates were 5lbs/acre for AC and 38 lbs/acre for sainfoin. Grazing of the two pastures occurred in 2000, 2002 and 2003 with 1999 and 2001 not grazed due to drought. Yearling steers were used to graze the AC at the early bud stage (generally the stage when most bloating occurs) and the S at early flower. The steers on AC were given CRC Rumensin Boluses every year while the steers on the AC + S only received the boluses in 2000. No bloating or bloating symptoms were observed in steers grazing either treatment. Performance of steers varied depending on the year and rainfall with minimum weight gains of 2.0 lbs/day to 4.2 lbs/day. Pounds of beef produced per acre varied from a low of 96.6 to 188.6 in different years. A meadow brome pasture on the southside and a mixture of Western wheatgrass-Northern wheatgrass on the northside generally had forage production of under half the alfalfa pastures. In previous years on this quarter grazing a cross seeded mix of various grasses and Rangelander Alfalfa bloat had been a problem every year but no bloat was ever treated on the AC Grazeland Alfalfa. We conclude that AC Grazeland Alfalfa helps reduce bloat on pasture and would thus give increased production per acre over straight grass pastures. On the wind eroded soil we were using, AC Grazeland had excellent production compared to the seeded native grasses Northern and Western wheatgrass on the north side and meadowbrome on the south side both of which would need large amounts of fertilizer to have production increases. Therefore, AC Grazeland in pastures seems like a very good way of improving productivity without undo risk of bloat.

The pastures of grasses cross seeded with Ranglander alfalfa in 1986 showed a need for phosphate from 60 to 80 pounds per acre. Liquid fertilizer was available in a blend of 10-34-0 and was coulter banded into the pastures at 200 pounds per acre to give additional phosphate per acre of 68 pounds. In the few years of our trial that had adequate moisture we saw increases of forage in our exclusion cages from 15 to 100% with the increase in pounds being up to 1000 per acre on the best plots. The best levels of production would have given a dollar for dollar return on the fertilizer but that is all. The conclusion is that phosphate is needed for maximizing plant growth but that there is no economic return available in the year of production. In the final year of soil testing we noted that phosphate levels had increased about 10 pounds per acre on all plots which may give some benefit in future years.

During the years of the trail Field Days in conjunction with SPARC were held in July of 1999, 2000 and 2002. Every year the secretary –manager and sometimes other directors were interviewed by the local radio station agricultural reporter to get updates on the research project. In 1999 the local TV station produced a

show featuring the SWFA AC Grazeland project, the show was syndicated and shown on other stations. In 1999 and 2001 research reports were prepared and printed in the local newspaper. Presentations of the research work were made at the Going for Grass Seminar in Swift Current in 2000, Foraging Into the Future II at Swift Current in 2002 and the Western Canadian Grazing Conference in Red Deer in Dec. of 2002. In June of 2003 The Grainews paper wrote a report on the SWFA AC Grazeland Alfalfa research. Each year a newsletter is sent to the SWFA member detailing the research results from the last year and summarizing the overall project.

AC Grazeland (without any fertilizer) grazed at the most bloat producing stage did not give any bloat problems but increased the productivity of the land significantly over pure grass stands adjacent. The use of AC Grazeland or other low bloat producing legumes could significantly increase the production of beef per acre in the brown soil zone. Application of phosphate fertilizer even in grass alfalfa stands where nitrogen is being supplied by the alfalfa is not economically feasible in the brown soil zone.

PERSONNEL:

Hours from various personnel from the SPARC research station and SAFRR personnel that helped with the project plus directors who helped on weigh days.

1999	143	Directors	30
2000	161	Directors	30
2001	176	Directors	30
2002	75	Directors	15
2003	290	Directors	6
2004	100	Directors	6

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At every presentation, interview and report issued ADF was acknowledged as the funding agency.